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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,628	07/29/2003	David P. Dumas	66788-036	9067

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EXAMINER	
NOGUEROLA, ALEXANDER STEPHAN	
ART UNIT	**PAPER NUMBER**
1753	

MAIL DATE	DELIVERY MODE
08/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/630,628	DUMAS, DAVID P.	
	Examiner	Art Unit	
	ALEX NOGUEROLA	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/25/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Rejections and Objections pending since the Office action of January 19, 2007

1. All previous rejections are withdrawn.

2. The objection to claim 5; this is, its allowability if incorporated into claim 1, is withdrawn in light of new references used below to reject the claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 2, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al. (US 6,413,400 B1) ("Soane"), *Modern Plastics Encyclopedia '99*, W. Kaplan (ed.), McGraw-Hill, New York, 1998, Appendix C ("Encylopedia"), *Plastics Design Handbook*, by Rosato et al., Kluwwer academic Publishers, 2001, pp. 309-334 and 400-412, ("Handbook"), and Jons et al. (US 5,783,452) ("Jons").

Addressing claim 1, Soane discloses an electrokinetic device fabricated from a polycarbonate. See the abstract; Figures 1 and 2; and claim 1. Soane, though, does not disclose having the electrokinetic device made of polyol (allyl carbonate) polymer. However, barring evidence to the contrary, such as unexpected results the choice of one polycarbonate polymer over another from which to fabricate the device was within the skill of one with ordinary skill in the art at the time of the invention. At the time of the invention, various optical, mechanical, physical, and chemical properties of polymers and techniques for measuring these properties were known for a wide variety of polymers, especially polycarbonate and polyol (allyl carbonate) polymer. Most particularly, the properties that Applicant found useful in polyol (allyl carbonate) polymer, such as the optical properties of being colorless and clear, and the properties of being abrasion, chemical, heat, and radiation resistant are also present in polycarbonate, although to a different degree. See page 21, lines 01-05 in Applicant's

specification; pages C.7, C.29, C.31 in Encyclopedia; and Table 5-7 on page 330 and Table 7-15(b) in Handbook. Thus, the choice of one polycarbonate over another is just a matter of optimizing the device for the sample, buffer, and detection method to be used during an electrokinetic process using the device. Jons, for example, discloses that a microchannel device suitable for electrophoresis may be fabricated from either polycarbonate resins or diglycol dialkyl carbonate resins. See the abstract and col. 03:36-50.

Addressing claim 2, for the additional limitation of this claim see claim 1 in Soane.

Addressing claim 4, for the additional limitation of this claim note that it is a product-by-process limitation that does not appear to structurally or compositionally differentiate the claimed electrokinetic device from that taught by Soane as modified by Encylopedia, Handbook, and Jons. In any event, a polymer is inherently generated by polymerizing a prepolymer of the polymer. In particular, a polyol(allyl carbonate)polymer is made by generating a prepolymer of polyol(allyl carbonate).

Addressing claim 6, for the additional limitation of this claim see in Soane col. 08:62 – col. 09:02.

6. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. ("Microfabricated Polycarbonate CE Devices for DNA Analysis, Anal. Chem. 2001, 73, 4196-4201) ("Liu"), *Modern Plastics Encyclopedia '99*, W. Kaplan (ed.), McGraw-Hill, New York, 1998, Appendix C ("Encylopedia"), *Plastics Design Handbook*, by Rosato et al., Kluwwer academic Publishers, 2001, pp. 309-334 and 400-412, ("Handbook"), and Jons et al. (US 5,783,452) ("Jons").

Addressing claim 1, Liu discloses an electrokinetic device fabricated from a polycarbonate. See the abstract and Figure 1. Liu, though, does not disclose having the electrokinetic device made of polyol (allyl carbonate) polymer. However, barring evidence to the contrary, such as unexpected results the choice of one polycarbonate polymer over another from which to fabricate the device was within the skill of one with ordinary skill in the art at the time of the invention. At the time of the invention, various optical, mechanical, physical, and chemical properties of polymers and techniques for measuring these properties were known for a wide variety of polymers, especially polycarbonate and polyol (allyl carbonate) polymer. Most particularly, the properties that Applicant found useful in polyol (allyl carbonate) polymer, such as the optical

properties of being colorless and clear, and the properties of being abrasion, chemical, heat, and radiation resistant are also present in polycarbonate, although to a different degree. See page 21, lines 01-05 in Applicant's specification; pages C.7, C.29, C.31 in Encyclopedia; and Table 5-7 on page 330 and Table 7-15(b) in Handbook. Thus, the choice of one polycarbonate over another is just a matter of optimizing the device for the sample, buffer, and detection method to be used during an electrokinetic process using the device. Jons, for example, discloses that a microchannel device suitable for electrophoresis may be fabricated from either polycarbonate resins or diglycol dialkyl carbonate resins. See the abstract and col. 03:36-50.

Addressing claim 2, for the additional limitation of this claim see the Liu abstract.

Addressing claim 4, for the additional limitation of this claim note that it is a product-by-process limitation that does not appear to structurally or compositionally differentiate the claimed electrokinetic device from that taught by Soane as modified by Encylopedia, Handbook, and Jons. In any event, a polymer is inherently generated by polymerizing a prepolymer of the polymer. In particular, a polyol(allyl carbonate)polymer is made by generating a prepolymer of polyol(allyl carbonate).

7. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Jons et al. (US 5,783,452) ("Jons") in view of *Modern Plastics Encyclopedia '99*, W. Kaplan (ed.), McGraw-Hill, New York, 1998, Appendix C ("Encylopedia"), *Plastics Design Handbook*, by Rosato et al., Kluwwer academic Publishers, 2001, pp. 309-334 and 400-412, ("Handbook"), and Concise Encylopedia of Plastics, Springer-Verlag, 2000, pg. 93.) ("Concise Encylopedia").

Jons discloses an electrokinetic device fabricated from a polyol(allyl carbonate) polymer. Jons does not specifically mention having the polyol(allyl carbonate) polymer be diethylene glycol bis(allyl carbonate). However, Jons does disclose diglycol dialkyl carbonate resins. See col. 03:36-50. At the time of the invention, various optical, mechanical, physical, and chemical properties of polymers and techniques for measuring these properties were known for a wide variety of polymers, such as polycarbonate and polyol (allyl carbonate) polymer. Moreover, the properties that Applicant found useful in polyol (allyl carbonate) polymer, such as the optical properties of being colorless and clear, and the properties of being abrasion, chemical, heat, and radiation resistant are also present in polycarbonate, although to a different degree. See page 21, lines 01-05 in Applicant's specification; pages C.7, C.29, C.31 in Encyclopedia; and Table 5-7 on page 330 and Table 7-15(b) in Handbook. In particular, diethylene glycol bis (allyl carbonate) has been sold since at least the 1940s and was known to have "exceptionally good optical transparency, with excellent hardness and scratch resistance..." See the entry for "allyl diglycol carbonate plastic" on page 93 in the Concise Encyclopedia.

Thus, the choice of one polymer over another, such as the choice to use diethylene glycol bis (allyl carbonate), is, in light of Encyclopedia, Handbook, and Concise Encyclopedia, just a matter of optimizing the device for the sample, buffer, and detection method to be used during an electrokinetic process using the device.

8. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webster et al. ("Batch Fabricated Electrophoresis Chips on Polycarbonate Substrates by Surface Micromachining," Journal of Capillary Electrophoresis and Microchip Technology (1999), 6(1 & 2), 19-25) ("Webster"), *Modern Plastics Encyclopedia '99*, W. Kaplan (ed.), McGraw-Hill, New York, 1998, Appendix C ("Encylopedia"), *Plastics Design Handbook*, by Rosato et al., Kluwwer academic Publishers, 2001, pp. 309-334 and 400-412, ("Handbook"), and Jons et al. (US 5,783,452) ("Jons").

Addressing claim 1, Webster discloses an electrokinetic device fabricated from a polycarbonate. See the abstract. Webster, though, does not disclose having the electrokinetic device made of polyol (allyl carbonate) polymer. However, barring evidence to the contrary, such as unexpected results the choice of one polycarbonate polymer over another from which to fabricate the device was within the skill of one with ordinary skill in the art at the time of the invention. At the time of the invention, various optical, mechanical, physical, and chemical properties of polymers and techniques for

measuring these properties were known for a wide variety of polymers, especially polycarbonate and polyol (allyl carbonate) polymer. Most particularly, the properties that Applicant found useful in polyol (allyl carbonate) polymer, such as the optical properties of being colorless and clear, and the properties of being abrasion, chemical, heat, and radiation resistant are also present in polycarbonate, although to a different degree. See page 21, lines 01-05 in Applicant's specification; pages C.7, C.29, C.31 in Encyclopedia; and Table 5-7 on page 330 and Table 7-15(b) in Handbook. Thus, the choice of one polycarbonate over another is just a matter of optimizing the device for the sample, buffer, and detection method to be used during an electrokinetic process using the device. Jons, for example, discloses that a microchannel device suitable for electrophoresis may be fabricated from either polycarbonate resins or diglycol dialkyl carbonate resins. See the abstract and col. 03:36-50.

Addressing claim 2, for the additional limitation of this claim see the Liu abstract.

Addressing claim 4, for the additional limitation of this claim note that it is a product-by-process limitation that does not appear to structurally or compositionally differentiate the claimed electrokinetic device from that taught by Soane as modified by Encyclopedia, Handbook, and Jons. In any event, a polymer is inherently generated by polymerizing a prepolymer of the polymer. In particular, a polyol(allyl carbonate)polymer is made by generating a prepolymer of polyol(allyl carbonate).

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al. (US 6,413,400 B1) ("Soane"), *Modern Plastics Encyclopedia '99*, W. Kaplan (ed.), McGraw-Hill, New York, 1998, Appendix C ("Encyclopedia"), *Plastics Design Handbook*, by Rosato et al., Kluwwer academic Publishers, 2001, pp. 309-334 and 400-412, ("Handbook"), and Jons et al. (US 5,783,452) ("Jons") as applied to claims 1, 2, 4, and 6 above, and further in view of Singh et al. (US 6,627,406 B1) ("Singh") or Wainright et al. (US 6,306,273 B1) ('Wainright").

Soane as modified by Encyclopedia, Handbook, and Jons does not mention having the polyol(allyl carbonate) polymer modified by hydrolysis. Singh and Wainright both disclose modify by hydrolysis a microchannel in a microfluidic device fabricated from polymer. See in Singh the abstract; Figure 7A; and col. 11:59 – col. 12:06 and in Wainwright the abstract; Figure 3; and col. 21:05-25. It would have been obvious to one with ordinary skill in the art at the time of the invention to modify by hydrolysis as taught

by Singh or Wainright the electrokinetic device of Soane as modified by Encyclopedia, Handbook, and Jons because as taught by Singh then the microchannel walls can be functionalized to have the wettability of the microchannel walls as desired (col. 11:58 – col. 12:06) or as taught by Wainright to prevent protein adsorption and to adjust the elecroosmotic flow as desired (col. 21:05-25).

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. ("Microfabricated Polycarbonate CE Devices for DNA Analysis, Anal. Chem. 2001, 73, 4196-4201) ("Liu"), *Modern Plastics Encyclopedia '99*, W. Kaplan (ed.), McGraw-Hill, New York, 1998, Appendix C ("Encyclopedia"), *Plastics Design Handbook*, by Rosato et al., Kluwwer academic Publishers, 2001, pp. 309-334 and 400-412, ("Handbook"), and Jons et al. (US 5,783,452) ("Jons") as applied to claims 1, 2, and 4 above, and further in view of Singh et al. (US 6,627,406 B1) ("Singh") or Wainright et al. (US 6,306,273 B1) ('Wainright").

Liu as modified by Encyclopedia, Handbook, and Jons does not mention having the polyol(allyl carbonate) polymer modified by hydrolysis. Singh and Wainright both disclose modify by hydrolysis a microchannel in a microfluidic device fabricated from polymer. See in Singh the abstract; Figure 7A; and col. 11:59 – col. 12:06 and in Wainwright the abstract; Figure 3; and col. 21:05-25. It would have been obvious to one

with ordinary skill in the art at the time of the invention to modify by hydrolysis as taught by Singh or Wainright the electrokinetic device of Liu as modified by Encyclopedia, Handbook, and Jons because as taught by Singh then the microchannel walls can be functionalized to have the wettability of the microchannel walls as desired (col. 11:58 – col. 12:06) or as taught by Wainright to prevent protein adsorption and to adjust the elecroosmotic flow as desired (col. 21:05-25).

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jons et al. (US 5,783,452) ("Jons"), *Modern Plastics Encyclopedia '99*, W. Kaplan (ed.), McGraw-Hill, New York, 1998, Appendix C ("Encyclopedia"), *Plastics Design Handbook*, by Rosato et al., Kluwwer academic Publishers, 2001, pp. 309-334 and 400-412, ("Handbook"), and Jons et al. (US 5,783,452) ("Jons") in view of Singh et al. (US 6,627,406 B1) ("Singh") or Wainright et al. (US 6,306,273 B1) ('Wainright").

Jons does not mention having the polyol(allyl carbonate) polymer modified by hydrolysis. Singh and Wainright both disclose modify by hydrolysis a microchannel in a microfluidic device fabricated from polymer. See in Singh the abstract; Figure 7A; and col. 11:59 – col. 12:06 and in Wainwright the abstract; Figure 3; and col. 21:05-25. It would have been obvious to one with ordinary skill in the art at the time of the invention to modify by hydrolysis as taught by Singh or Wainright the electrokinetic device of Jons because as taught by Singh then the microchannel walls can be functionalized to have

the wettability of the microchannel walls as desired (col. 11:58 – col. 12:06) or as taught by Wainright to prevent protein adsorption and to adjust the elecroosmotic flow as desired (col. 21:05-25).

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over over Webster et al. ("Batch Fabricated Electrophoresis Chips on Polycarbonate Substrates by Surface Micromachining," Journal of Capillary Electrophoresis and Microchip Technology (1999), 6(1 & 2), 19-25) ("Webster"), *Modern Plastics Encyclopedia '99*, W. Kaplan (ed.), McGraw-Hill, New York, 1998, Appendix C ("Encyclopedia"), *Plastics Design Handbook*, by Rosato et al., Kluwwer academic Publishers, 2001, pp. 309-334 and 400-412, ("Handbook"), and Jons et al. (US 5,783,452) ("Jons") as applied to claims 1, 2, and 4 above, and further in view of Singh et al. (US 6,627,406 B1) ("Singh") or Wainright et al. (US 6,306,273 B1) ('Wainright").

Jons as modified by Encyclopedia, Handbook, and Concise Encyclopedia does not mention having the polyol(allyl carbonate) polymer modified by hydrolysis. Singh and Wainright both disclose modify by hydrolysis a microchannel in a microfluidic device fabricated from polymer. See in Singh the abstract; Figure 7A; and col. 11:59 – col. 12:06 and in Wainwright the abstract; Figure 3; and col. 21:05-25. It would have been obvious to one with ordinary skill in the art at the time of the invention to modify by hydrolysis as taught by Singh or Wainright the electrokinetic device of Jons as modified

by Encyclopedia, Handbook, and Jons because as taught by Singh then the microchannel walls can be functionalized to have the wettability of the microchannel walls as desired (col. 11:58 – col. 12:06) or as taught by Wainright to prevent protein adsorption and to adjust the elecroosmotic flow as desired (col. 21:05-25).

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1, 2, and 4 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Jons et al. (US 5,783,452) ("Jons").

Addressing claims 1 and 2, for the additional limitations of these claims see the abstract and col. 03:36-49. Note that the substrate may be fabricated from a diglycol dialkyl carbonate resin.

Addressing claim 4, for the additional limitation of this claim note that it is a product-by-process limitation that does not appear to structurally or compositionally differentiate the claimed electrokinetic device from that taught by Soane as modified by Encylopedia, Handbook, and Jons. In any event, a polymer is inherently generated by

polymerizing a prepolymer of the polymer. In particular, a polyol(allyl carbonate)polymer is made by generating a prepolymer of polyol(allyl carbonate).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alex Noguerola
Primary Examiner
AU 1753
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